4. WHAT IS THE GEOGRAPHIC DISTRIBUTION OF HIV INFECTION?

Prevention planning value:
Provides planning groups with information about possible locations for prevention activities that may offer access to individuals at high risk for HIV. Directly supports decisions about priorities among HIV prevention needs and possible interventions.

Key components:
AIDS cases
- AIDS cases by residence at diagnosis (recent years)

HIV Seroprevalence among childbearing women
- Seroprevalence by geographic location

Seroprevalence among Job Corps entrants
- Prevalence by geographic area

Seroprevalence among applicants for military service
- Prevalence by geographic area

STD surveillance data
- STD rates by county

Key issues:
For the planning group
- HIV infection and risk behavior are unevenly distributed within the region.
- Identifying geographic concentrations indicates locations where pre vention programs may be needed.

For the epidemiologist
- Use of data at the zip-code or census-tract level must protect individual identities.
- Data maps are excellent for presentations; tables and graphs may also be useful.

QUESTION 4

Question 4: WHAT IS THE GEOGRAPHIC DISTRIBUTION OF HIV INFECTION?

The HIV epidemic in the United States is composed of multiple separate epidemics in states, counties, and municipalities. Because of the uneven distribution of HIV and risk behavior for HIV both geographically and within populations, planning groups must know where HIV is concentrated to determine where prevention activities will reach persons at highest risk for HIV infection.

Geographic areas can be described at several levels, including state, region, county, city, urban/rural, health district, and zip code. Data maps are excellent for describing the geographic distribution of HIV/AIDS and should be used whenever possible. Although not all areas will have the sophisticated software needed to map data electronically, use of simple existing maps may be as effective. In addition, tables and graphs can often provide the same amount of information as maps.

Data from AIDS case surveillance and from clinic and hospital-based seroprevalence surveys can also be used in conjunction with the needs assessment. Health care facilities are sites where persons at highest risk for HIV infection may be reached for primary and secondary prevention activities. In addition, many of these sites collect relevant HIV or STD data. Clinic-based HIV serologic surveys are conducted in sites where populations at high risk may be reached for targeted interventions, e.g., sexually transmitted disease clinics, drug treatment centers, tuberculosis clinics, and clinics for homeless and runaway youth.

4.1 What data can be used to describe the geographic distribution of HIV infection?

Comment:

Data-release policies must be strictly followed when providing cross-tabulations of data that include geographic residence. Data at the zip-code or census-tract level may be presented if measures are taken to prevent inadvertently identifying individual persons.

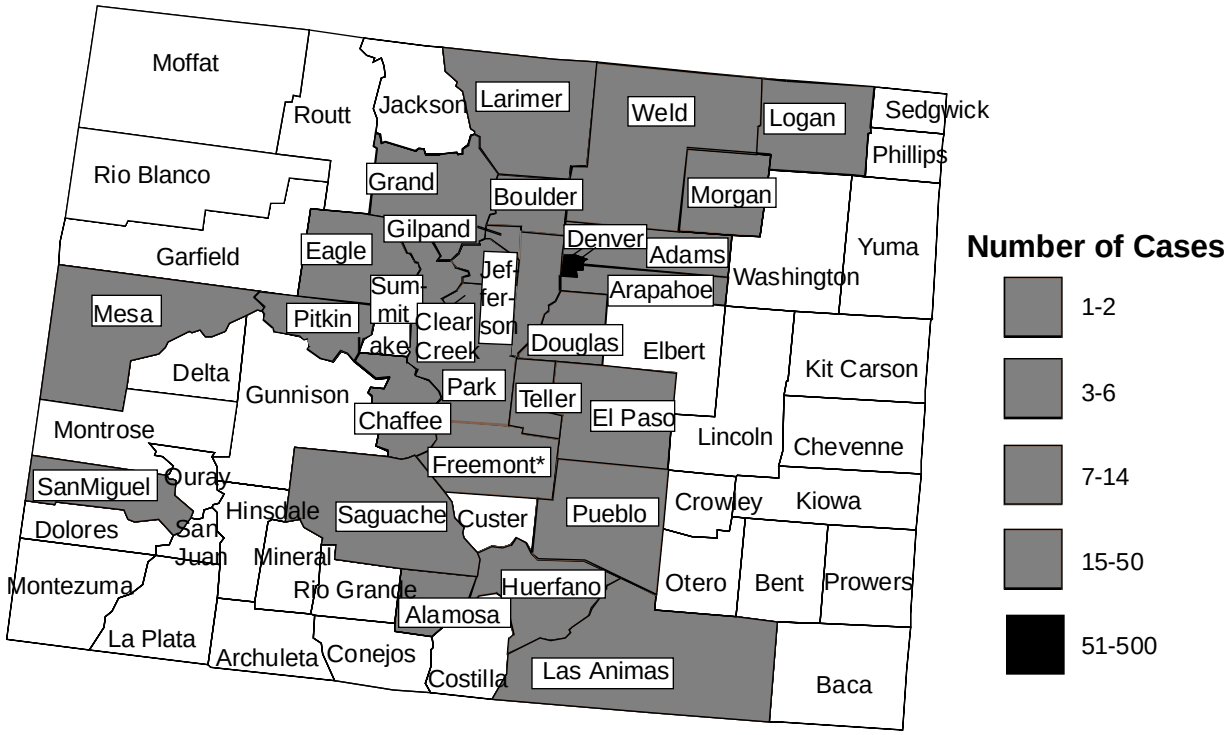
Widely Available Data

4.1.a AIDS Surveillance (*Handbook*, section 4.2.1.1, pages 4-5 and 4-7): AIDS surveillance data are the only population-based HIV data consistently available in all states with information on residence at diagnosis, sex, race/ethnicity, age, and mode of HIV exposure. AIDS surveillance data are available from state and local AIDS surveillance coordinators.

❒ **AIDS cases by residence at diagnosis (region, county, zip code, or census tract) for most recent year(s) of report** *(Example: Figure 4.1.1)*

Example:

Figure 4.1.1 AIDS cases by county of residence at diagnosis, Colorado, 1993



*Fremont county is the location of state corrections facility where inmates with AIDS are housed

(Source: Colorado Department of Public Health and Environment)

In 1993, most AIDS cases in Colorado were reported from several counties in the central and north-central parts of the state, particularly in the Denver area.

❒ **AIDS cases by residence at diagnosis (region, county, zip code, or census tract) and sex or race/ethnicity for most recent year(s) of report** *(Example not shown)*

Comment:

Some planning groups may wish to tabulate data or construct maps to relate AIDS cases to census data on a region's socioeconomic characteristics (e.g., proportion of the population living below the poverty level).

Comment:

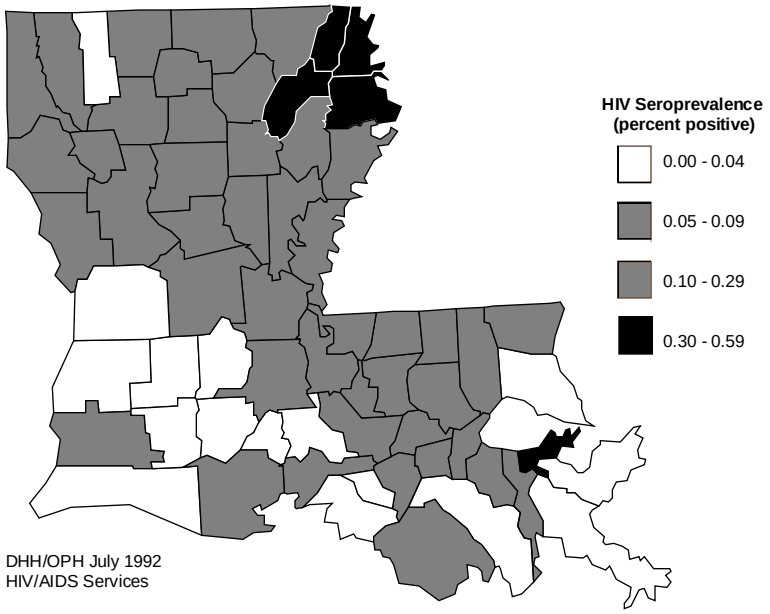
Data maps must be prepared and interpreted with caution. For example, a large number of cases among inmates in a correctional facility may cause the AIDS incidence in a small geographic area to appear higher than the actual incidence in the community (Figure 4.1.1). In addition, high incidence rates based on very few cases in low-population areas may be misleading. Both the magnitude (number of cases) and impact (rates) of HIV should be considered when mapped data are used to target prevention activities.

4.1.b National HIV Survey of Childbearing Women (*Handbook*, section 4.2.1.3, pages 4-7 to 4-8): Data are available from state and local HIV seroprevalence coordinators.

❒ **HIV seroprevalence among childbearing women, by residence at delivery or location of hospital (region, county, zip code, or census tract) for most recent year(s) of survey** *(Examples: Figures 4.1.2 and 4.1.3)*

Examples:

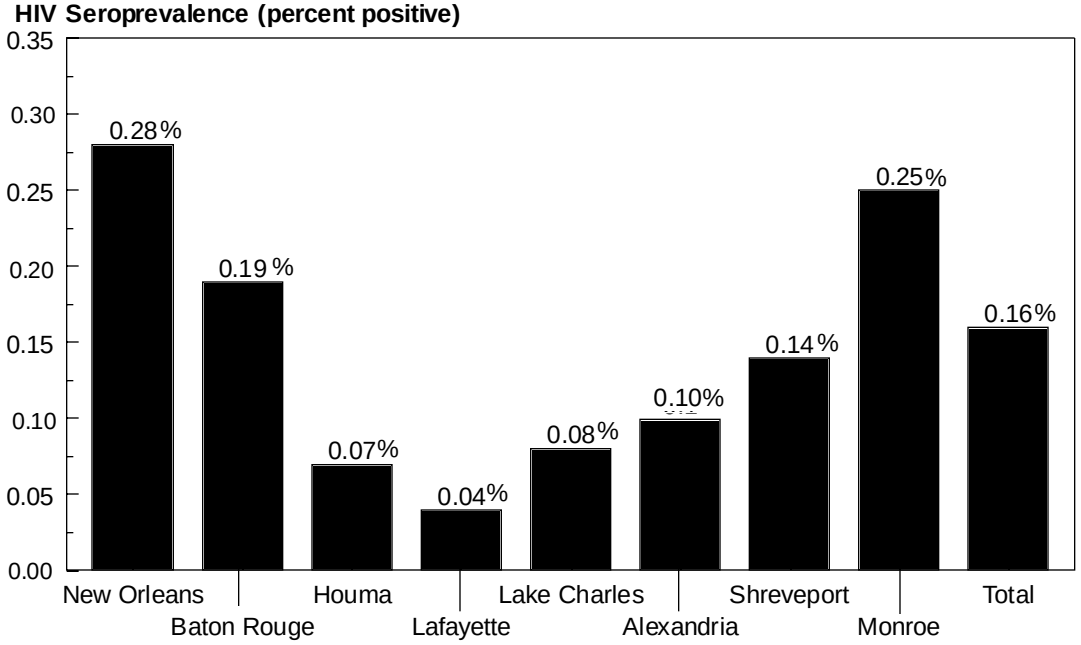
Figure 4.1.2 HIV seroprevalence among childbearing women, by county, Louisiana, 1991



(Source: Louisiana Department of Health and Hospitals)

In 1991, the Orleans parish and several counties in the northeastern part of the state recorded the highest HIV seroprevalence rates among childbearing women in the state. In general, HIV prevalence was higher in the northern part of the state than in the southern.

Figure 4.1.3 HIV seroprevelance among childbearing women, by region, Louisiana, 1991



(Source: Louisiana Department of Health and Hospitals)

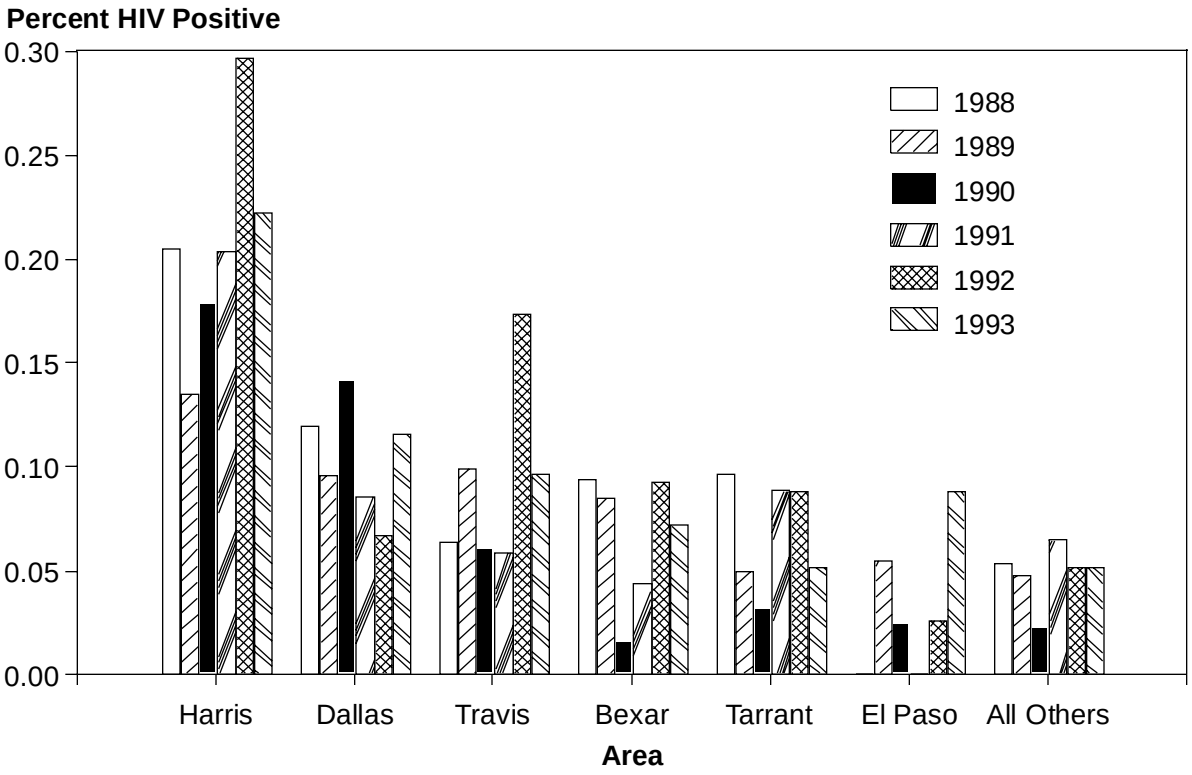
In 1991, HIV seroprevalence among childbearing women was highest in New Orleans and Monroe but only slightly lower in Baton Rouge, and Shreveport. HIV seroprevalence varied sevenfold among the regions.

QUESTION 4

❒ **HIV seroprevalence among childbearing women, by residence at delivery or location of hospital (region, county, zip code, or census tract) for each year of survey** *(Example: Figure 4.1.4)*

Example:

Figure 4.1.4 HIV seroprevalence among childbearing women, by county, Texas, 1988-1993



(Source: Texas Department of Health)

The variation in HIV seroprevalence among childbearing women in different areas of the state was greater than the variation from year to year. Seroprevalence among women from Harris County was higher than among women from other areas.

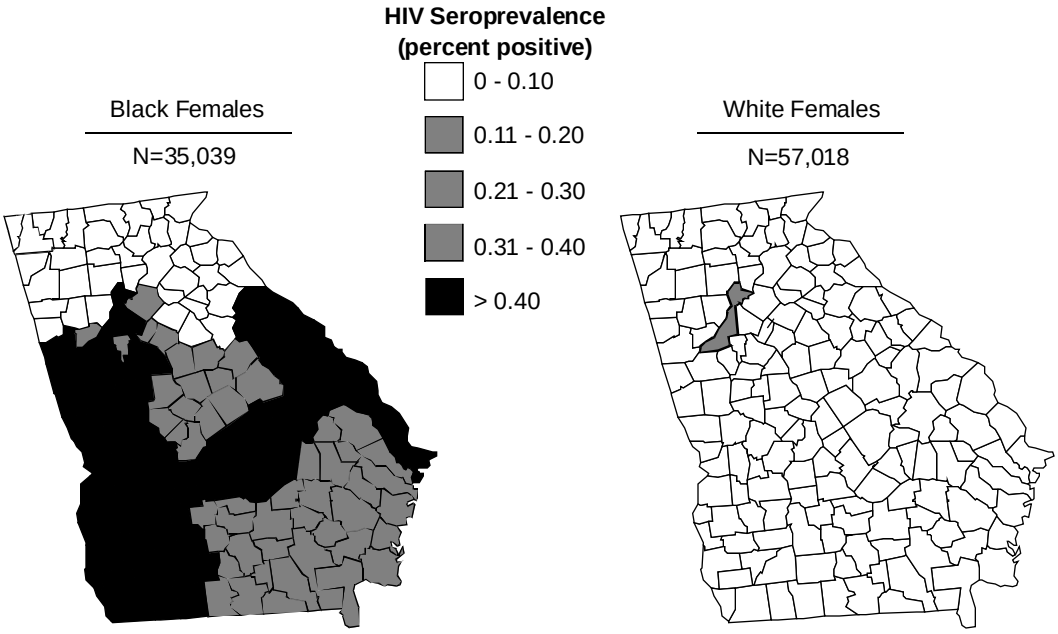
❒ **HIV seroprevalence among childbearing women, by residence at delivery or location of hospital (region, county, zip code, or census tract) and race/ethnicity for most recent year(s) of survey** *(Example: Figure 4.1.5)*

Comment:

Some areas may wish to tabulate data or use maps to relate HIV seroprevalence among women to census data on a region's socioeconomic characteristics (e.g., proportion of the population living below the poverty level).

Example:

Figure 4.1.5 HIV seroprevalence among childbearing women, by health district and race, Georgia, 1993



(Source: Georgia Department of Human Resources)

Across the state, HIV seroprevalence was much higher among black women than among white women. Seroprevalence was highest in Fulton County and in the counties of rural south Georgia. In 1993, in Fulton County, 1 of every 250 pregnant women was HIV infected.

4.1.c **HIV Screening of Job Corps Entrants** (*Handbook*, section 4.2.1.5, page 4-8): These data are useful only for states with many entrants, where data may be stratified by residence at time of application and sex or race/ethnicity without compromising confidentiality. In other areas, show the number of Job Corps entrants tested and the number and percentage who tested HIV positive. Job Corps data are available from the HIV Seroepidemiology Branch, Division of HIV/AIDS Prevention, CDC.

❒ **HIV seroprevalence among Job Corps entrants, by residence at application and sex or race/ethnicity for most recent year(s) of report** *(Example not shown)*

4.1.d **HIV Screening of Civilian Applicants for Military Service** (*Handbook*, section 4.2.1.6, pages 4-8 to 4-9): These data are useful only for states with many applicants, where data may be stratified by residence at time of application and sex or race/ethnicity without compromising confidentiality. In other areas, show the number of applicants tested and the number and percentage who tested HIV positive. Data are available through state and local HIV seroprevalence coordinators.

❒ **HIV seroprevalence among military applicants, by residence at application and sex or race/ethnicity for most recent year(s) of report** *(Example not shown)*

4.1.e **Surveillance of Bacterial Sexually Transmitted Diseases** (*Handbook*, section 4.2.1.10, pages 4-10 to 4-11): Data are available from state or local STD program managers.

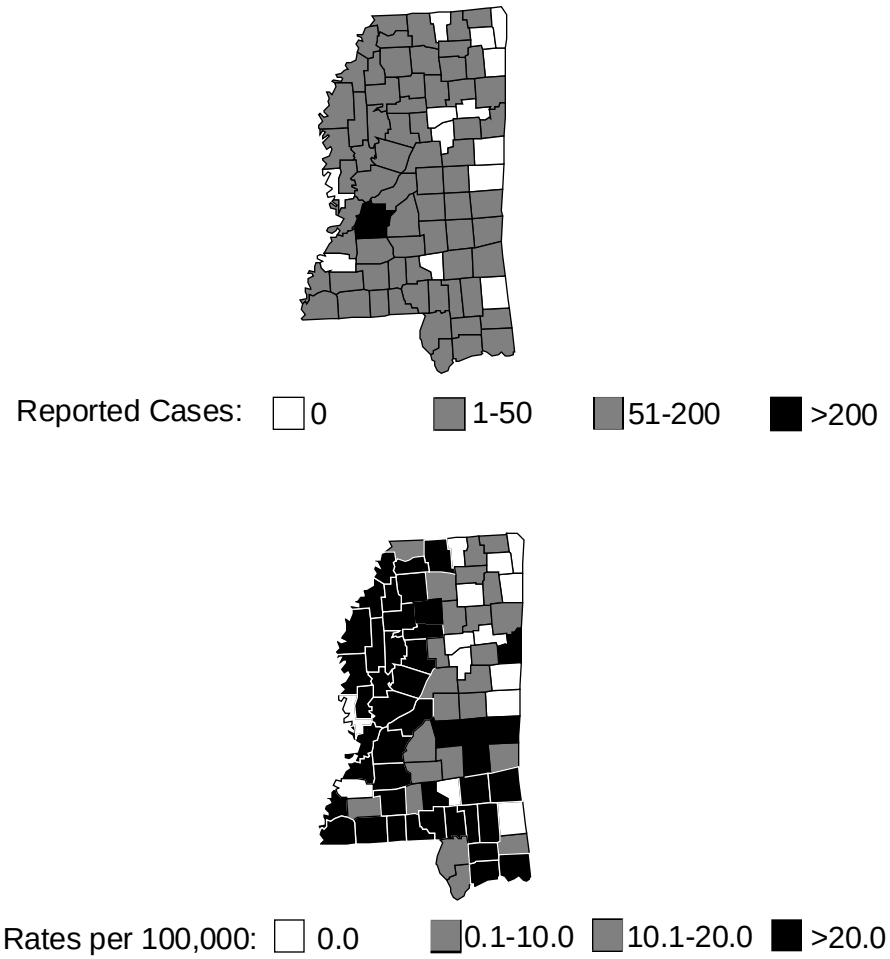
Comment:

Although the presence of syphilis indicates high-risk behavior, the *absence* of syphilis does not indicate absence of risk; rather it may be a marker of effective syphilis control (e.g., men who have sex with men in a sexual network with low prevalence of syphilis). Inferences about areas with low syphilis rates should be made with caution. Areas with high syphilis rates should be considered for prevention efforts. Clinics diagnosing and treating persons with syphilis are also places where persons at high risk for HIV may be

reached.

❒ **Primary and secondary syphilis cases and rates by residence at diagnosis for most recent year(s) of report** *(Examples: Figures 4.1.6 and 4.1.7)*

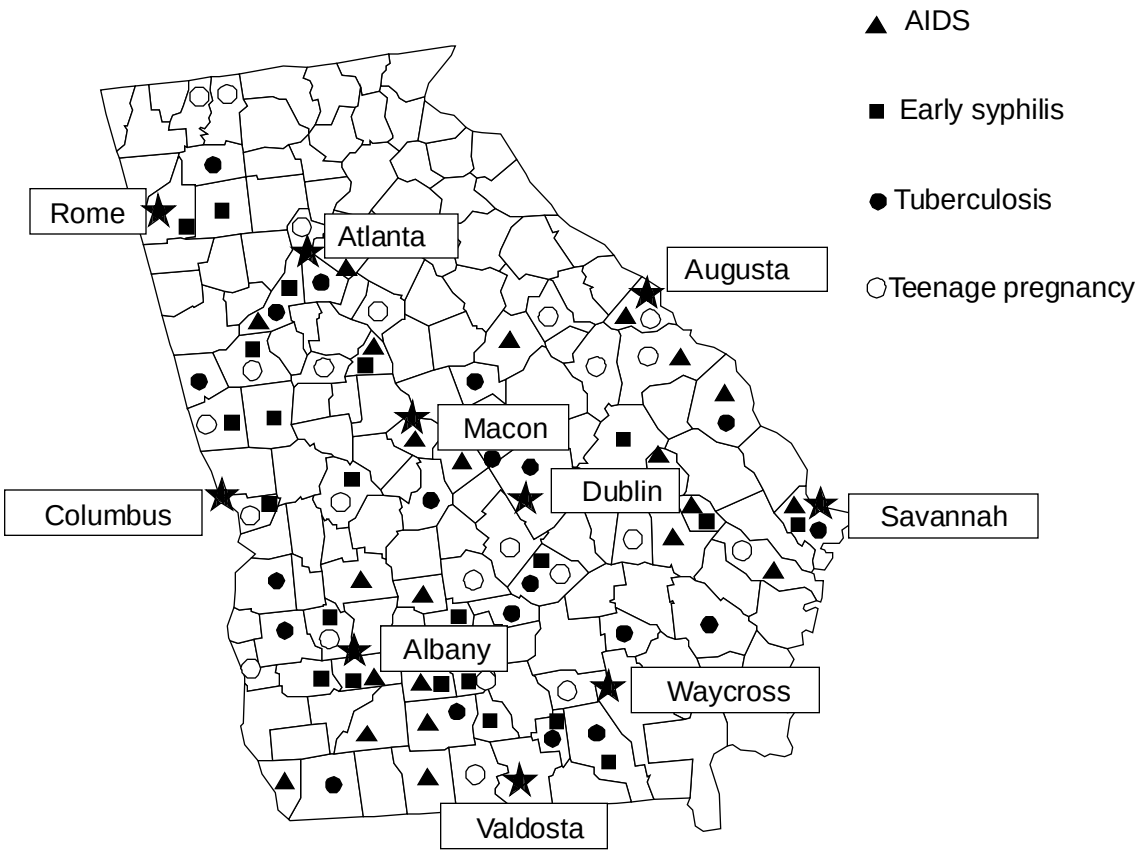
Figure 4.1.6 Primary and secondary syphilis cases and rates, by county, Mississippi, 1992



Example:
(Source: CDC)

In 1992, the largest number of syphilis cases were reported in Hinds County. High syphilis rates were reported in many counties in western and southern Mississippi.

Figure 4.1.7 Counties with the highest rates of AIDS, syphilis, tuberculosis, and teenage pregnancy, Georgia, 1993



Example:
(Source: Georgia Department of Human Resources)

Several counties in Georgia have high rates of AIDS and early syphilis, tuberculosis, or teenage pregnancies. This map plots rates of AIDS cases with markers for risk for HIV infection to identify regions of the state that should be considered for targeting prevention activities.

Comment:

Mapping data from several sources can be very useful in identifying areas for prevention activities.

❒ **Gonorrhea cases and rates by residence at diagnosis for most recent year(s) of report** *(Example not shown)*

4.2 Briefly summarize key findings from Question 4

In addition to summarizing the key findings from Question 4, note additional data needed to better answer the question.

Conclusions

Conclusions should be derived from a synthesis of the summaries for each of the four key questions. The conclusions should provide a list of priority groups and areas for further consideration by the community planning group. Groups or areas substantially affected by HIV and those that are less affected but have a substantial prevalence of high-risk behavior or other indicators of vulnerability should be clearly delineated.

The conclusions of the epidemiologic profile should provide community planning groups with a comprehensive understanding of the impact of HIV, both regionally and within population groups. Because the profile provides only part of the information required for decision-making, some of the priority groups or areas identified by the epidemiologic profile may not be identical to those ultimately given high priority by the community planning group. The profile and its conclusions should serve as the starting point for needs assessment and gap analysis to guide community planning groups in setting priorities and making decisions for targeting HIV prevention activities. All the data compiled in the community planning process need to be considered together and synthesized before the HIV prevention plan is developed. Finally, the HIV prevention plan must clearly reflect how plans for prevention are based on data.

References

1. National Commission on AIDS. The Challenge of HIV/AIDS in Communities of Color. Washington, D.C.: National Commission on AIDS, 1992.

2. Adler NE, Boyce WT, Chesney MA, Folkman S, Syme SL. Socioeconomic inequalities in health. JAMA 1993;269:3140-5.

3. Bureau of the Census. A Guide to State and Local Census Geography. Washington, D.C.: U.S. Department of Commerce, 1993.

4. Centers for Disease Control and Prevention. HIV/AIDS Surveillance Report 1994;5:1-33.

5. Centers for Disease Control and Prevention. Update: trends in AIDS diagnosis and reporting under the expanded surveillance definition for adolescent and adults--United States, 1993. MMWR 1994;43:826-31.

6. Alcabes P, Munoz A, Vlahov D, Friedland GH. The incubation period of human immunodeficiency virus. Epidemiol Rev 1993;15:305-18.

7. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance, 1993. Atlanta: U.S. Department of Health and Human Services, 1994

8. Centers for Disease Control. National HIV Serosurveillance Summary: results through 1992. Vol 3. Atlanta: U.S. Department of Health and Human Services, 1994.

9. Chu SY, Conti L, Schable BA, Diaz T. Female-to-female sexual contact and HIV transmission. JAMA 1994;272:433.

10. National Center for Health Statistics. Annual Summary of Births, Marriages, Divorces, and Deaths: United States, 1992. Hyattsville, MD: U.S. Department of Health and Human Services, 1993. (Monthly vital statistics report; vol 42, no.21, suppl).

11. Connor EM, Sperling RS, Gelber R, et al. Reduction of maternal-infant transmission of human immunodeficiency virus type 1 with zidovudine treatment. N Engl J Med 1994;331:1173-80.

12. Centers for Disease Control and Prevention. Zidovudine for prevention of HIV transmission from mother to infant. MMWR 1994;43:285-7.

References

13. Centers for Disease Control and Prevention. U.S. Public Health Service recommendations for human immunodeficiency virus counseling and voluntary testing for pregnant women. MMWR 1995;44(No.RR-7).

14. Lindegren ML, Hanson C, Miller K, Byers RH, Onorato IM. Epidemiology of human immunodeficiency virus infection in adolescents, United States. Pediatr Infect Dis J 1994;13:525-35.

15. Oh MK, Cloud GA, Baker SL, et al. Chlamydial infection and sexual behavior in young pregnant teenagers. Sex Transm Dis 1993;20:45-50.

16. Matson SC, Pomeranz AJ, Kamps KA. Early detection and treatment of sexually transmitted diseases in pregnant adolescents of low socioeconomic status. Clin Pediatr 1993;32:609-12.